1. Use the following steady-state data collected from a patient to answer this question.

- 100 kg male subject
- GFR = 200 L/day
- 24 hour urine collection = 1.0 liters
- Urine creatinine concentration = 400 mg%

Assuming that the clearance of creatinine is equal to the GFR, based on these data, his:

- a) plasma creatinine concentration is 1 mg% x
- b) creatinine production rate is 1000 mg/24 hours
- c) the urine to plasma creatinine concentration ratio is 400/1
- d) creatinine production rate is 400 mg/24 hours
- e) the urine to plasma creatinine concentration ratio is 200/1

The clearance of inulin:

- a) is equal to the GFR because the amount of inulin excreted is equal to the amount of inulin reabsorbed
- b) increases as the plasma inulin concentration increases
- c) is determined by afferent and efferent arteriolar resistance
- d) decreases as the plasma inulin concentration increases
- e) increases when afferent arteriolar resistance increases

On a normal diet, the amount of

- glucose filtered exceeds the amount of glucose reabsorbed
- sodium filtered is less than the amount of sodium reabsorbed
- protein filtered is equal to the amount of protein excreted
- organic acid filtered is less than the amount of organic acid secreted
- protein filtered is equal to the GFR times the plasma protein concentration

4. Which one of the following statements regarding glomerular and tubular function is correct?

- a) If a solute is reabsorbed at the same rate as water, the tubular fluid concentration of the solute will decrease
- b) The single nephron glomerular filtration rate can be determined from the inulin concentration in tubular fluid from the end of the proximal tubule and in arterial plasma
- c) The concentration of chloride, glucose, and amino acids decrease along the length of the proximal tubule
- d) A competitive antagonist for the Na-Glucose transporter (SGLT) would cause glucose to accumulate in proximal tubular cells
- e) Inhibition of proximal tubular secretion of organic acids such as penicillin will decrease the clearance of those compounds but will increase the biological half-life

5. Which of the following statements concerning glucose reabsorption is correct?

- a) Glucosuria occurs in patients with nephrogenic diabetes mellitus because the renal transport capacity for glucose is reduced
- b) The plasma concentration at which glucose appears in the urine can be calculated if one knows the transport maximum (the Tm) for glucose and the GFR
- c) The amount of glucose reabsorbed increases as the plasma glucose concentration decreases
- d) The normal renal extraction of glucose is close to 1.0
- e) The clearance of glucose decreases as the plasma glucose concentration increases